

Radar Operations Center (ROC)
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April 8, 2003

MEMORANDUM FOR: AFWA/XPFC - Mike Spaulding
W/OS11 - John Simensky
FAA AOS-254 - Dennis Roofe

FROM: W/OPS4 - Tim Crum
SREC Executive Secretary

SUBJECT: Approved Minutes Of The November 6 and 7, 2002 WSR-88D
SREC Meeting

The WSR-88D System Recommendation and Evaluation Committee (SREC) met in Norman, OK, November 6 and 7, 2002. The summary of the meeting and resulting action items are in Attachment 1 and Attachment 2, respectively. Many staff from the NEXRAD triagencies, the ROC, and invited guests attended the meeting (Attachment 3). The final version of the meeting agenda is in Attachment 4. The minutes will be on the ROC web page (http://www.roc.noaa.gov/SREC_Min.pdf).

The primary meeting objectives were: (1) define future RPG and RDA build contents; and (2) initiate integrated software release planning between the RPG team and the ORDA Program. During the meeting we defined the recommended RPG Build 4 contents and a tentative list of the content of RPG builds 5, 6, and 7; and RDA builds 2 and 3.

These minutes and SREC briefing materials are available via anonymous ftp to the ROC ftp site: <ftp://ftp.roc.noaa.gov/Pub/Srec>. If you have difficulty accessing this site, please contact me.

Attachments

cc:

Meeting Attendees Listed In Attachment 3 and:

W/OPS - John McNulty	FAA - Tom Jenkins
W/OST1 - Fred Toepfer	W/OST1 - Frank Kelly
W/OST2 - Deirdre Jones	W/OST1 - Greg Cate
W/AR41 - Duane Carpenter	W/ER41 - William Murray
W/PR11 - Jay DelCano	W/SR42 - Victor Murphy
W/WR42 - Kristine Nelson	W/OPS4 - Branch Chiefs
W/OPS4 - Team Leaders	W/OS12 - Mary Fairbanks

Minutes Of The November 6 and 7, 2002
WSR-88D System Recommendation and Evaluation Committee (SREC) Meeting

Opening Executive Session, 6 November.

The following staff participated in the Executive Session:

SREC Chairperson	Jim Belville
SREC Vice Chairperson	Rich Vogt
SREC Executive Secretary	Russ Cook (acting)
NWS Voting Member	John Simensky
NWS Alternate Members	Jon Roe
DOD Voting Member	Mike Spaulding
FAA Voting Member	Dennis Roofe
FAA Alternate Member	Bill Bumgarner
Support Staff	Cheryl Stephenson, Mike Istok, Bob Elvander, Rhonda Scott

Rich Vogt began the meeting with a discussion of the meeting objectives: (1) Approve draft minutes from the April SREC; (2) Initiate integrated software release planning between RPG team and ORDA Program; (3) Develop the recommended Build 4 content and release date for NPMC approval; and (4) Develop targeted content and release dates for RPG builds 5-7.

The SREC approved the July 26, 2002 version of the minutes from the April 10 and 11, 2002 SREC, and reviewed the action items. Many action items were flagged for discussion and closure during this SREC.

Mr Mike Spaulding presented the Air Force's view of the current NEXRAD software development process. Some major points and concerns reflected in Mr Spaulding's briefing are:

- 1) Growing complexity of NEXRAD system (RDA, RPG, user interfaces - PUP, OPUP, AWIPS, WARP, ITWS, MIAWS, etc.).
- 2) New builds rely on outside developers, and must be tested against multiple display systems,
- 3) ORDA is on an aggressive schedule, with many RPG changes planned during same period,
- 4) DOD supports reliability and maintenance improvements, TCP/IP communications upgrade. The DOD has no requirement for 6 month builds, and
- 5) DOD recommends consolidated system builds instead of separate RPG and RDA builds.

Opening General Session, 6 November.

Rich Vogt opened the session by stating the SREC meeting goals. The primary goal of the general session was to obtain the technical information on the proposed algorithms the SREC members need to make informed decisions on the timing of integrating software into the RPG. The general session consisted of a series of invited topics and

technical summaries of the algorithms. The technical summaries were documented in the Algorithm Process Checklist the presenters provided in advance, in lieu of briefing slides. Below is a brief summary of the presentations and discussions that ensued.

1) Bill Armstrong, ROC, Contents, Status, Lessons Learned From RPG Build 3.

New products for Build 3 include Data Quality Assurance Algorithm, Enhanced High Resolution VIL, User Selectable Layer Reflectivity, Hodograph (VWP), Digital Storm Total Precipitation (DSP), and Beam Blockage Algorithm. Major changes include improved error reporting, operating system (OS) upgrade to Solaris 8, and migration to non-proprietary compilers. An offline version of the RPG will be ported to run on PCs with Linux. Systems level test phase was scheduled to run through November 22. Externally implemented software submissions were provided to ROC CM by July 31, with some later re-deliveries. Build activities are progressing according to schedule. Bill also listed some lessons learned from previous build cycles. Some ROC implemented changes must be completed very early in the build cycle to support external implementations. An engineering build must be established early and be provided to external organizations for use with Offline RPG or CODE implementation and documentation development. Design Approach Reviews enable good information exchange and benefit all participants. ROC software staff will continue to provide technical support to external organizations throughout the build and release cycles. New builds require significant coordination and interaction with external users. More attention should be given to the efficiency of new science algorithms.

2) Bill Armstrong, Bonnie Troup, Mike Istok, Status of Completion of the Implementation to Integration Process Plan.

Mike Istok presented a detailed overview of the process for radar science and technology infusion, and the recent activities by SEC, ROC, OHD, FAA, and Aerospace in support of the development of this process. He described the roles that the various stakeholders play in the various steps, including Design Approach Review, Integration Readiness Review, transfer of code to the ROC, and the Defect Handling Process. He summarized the briefing by stating that the process is working, thanks to good team relationships between implementors and integrators. Schedules are being met, and new capabilities are being delivered to the field, with low defect density and timely resolution.

3) Cheryl Stephenson, ROC, RPG System Resource Usage Summary.

Cheryl presented a handout listing numerous RPG tasks, and the system resources (CPU and memory) consumed by these tasks. This prompted some discussions concerning new software debugging and profiling tools, including the public domain GNU software tools. Discussions centered on the need to identify and improve algorithms which were resource intensive.

4) Agency Perspectives

A. DOD. Mike Spaulding, DOD NEXRAD Program Manager.

Mike presented the Air Force perspective on the software build process. Mike reminded the audience that the WSR-88D consists of three major parts: Radar Data Acquisition (RDA), Radar Product Generator (RPG), and the user display systems (PUP, OPUP, AWIPS, WARP, ITWS, MIAWS, etc.). To support agencies' missions, all parts must communicate and work well together. Mike expressed concern that current builds tend to focus on the RPG only, instead of on the system as a whole. He expressed concern that new builds rely more on outside developers, and that the ROC currently has three "RPG" builds in various stages of work. He expressed concern over the plan to deploy changes to installed systems during the ORDA deployment, and reminded all that multiple builds in the field add significant risk to the WSR-88D. He reminded the audience that DOD has a requirement to improve the reliability, maintainability, and availability of the WSR-88D, but has no requirement for 6 month software builds, nor for high resolution data. Mike then made some recommendations: consolidate WSR-88D builds into system builds, instead of separate RPG builds or RDA builds; drop from the system build software components for any display system which is not ready for testing according to the system schedule; ensure that we include changes required to support approved requirements needed by new projects (ORDA, Dual Pole, etc.).

B. DOT. Bill Bumgarner, FAA NEXRAD Program Office.

Bill presented the FAA's perspective on RPG Builds 4 and 5, and ORDA Build 2. He stated that FAA wants the Data Quality Assurance Algorithm (DQA), and an upgraded HRVIL for Build 3. For Build 4, the FAA wants the Enhanced Echo Tops (EET) algorithm, and additional refinements to HRVIL. In Build 5, they'd like the Machine Intelligent Gust Front Algorithm (MIGFA), and composite reflectivity with DQA input. Bill informed the attendees that all WARP systems are deployed and connected to their associated WSR-88Ds. Four production ITWS systems are installed, with 6 to follow in FY03, and 8 more in FY04. MIAWS has three operational prototypes in the field. Bill also mentioned that the WARP telecommunications circuits are maxed out at the 14.4 kbps transmission rate. The system can not support new products or faster VCPs. For ORDA Build 2, the FAA's highest requirement is for higher quality data for algorithm use and end user displays.

C. DOC. John Simensky, NWS Office of Climate Water and Weather Services.

John presented the NWS' perspective and priorities. John stated that the NWS priority is for algorithms and applications which improve warning lead times for hazardous weather such as tornadoes, severe thunderstorms, flash floods, and aviation hazards. For RPG Build 4, the NWS would like Rapid Updates for

Mesocyclone Detection, and Enhanced Precipitation Algorithms (EPRE) for testing. In Build 5, NWS wants Mesocyclone Detection Algorithm Machine Intelligent Gust Front (MIGFA), improved Range Correction Algorithm, new volume coverage patterns, and deployment of EPRE. In Build 6, NWS wants the Snow Accumulation Algorithm, the Convective Stratiform Correction Algorithm (CSSA), and Multi-PRF Dealiasing Algorithm.

5) Cheryl Stephenson, ROC, Discussion of ROC Perspective on Infrastructure Changes.

Cheryl presented an overview of some of the projects, improvements, and issues that software engineering will be addressing in the next few builds. Clutter filter map support is required for the Evansville radar project. Support is required for centralized collection of Archive Level II data. The Master System Control Function (MSCF) will be move to a separate CPCI. Changes are required to the RPG comms manager in support of TCP/IP and digital comms. Introduction of generic product formats (a self-describing product format). Extending the capabilities of the software development tools. Cheryl also mentioned that likelihood of test bed conflicts between RPG and ORDA during the Build 5 time frame. She also mentioned that Build 6 will be deploying during ORDA deployment.

6) Cheryl Stephenson, ROC, and Greg Cate, OST, Discussion of RPG Changes Needed to Test and Deploy the ORDA.

Cheryl stated that the following areas are impacted by ORDA: TCP/IP Communications, Message Headers, Alarm and Status Messages, Performance Data, Clutter Censor Zones and Clutter Filter Bypass Map, Clutter Filter Notchwidth Map, RDA Status Monitoring, RDA Control Commands, Archive II metadata, FAA redundant requirements, and the Master System Control Function (MSCF). Cheryl identified the following dependencies and assumptions: All RPG software changes required for ORDA will be identified by 1/31/03; ORDA-RPG ICD changes completed and available no later than 1/31/03; resources required for ORDA testing will not disrupt RPG build activities; workload for RPG Builds 4 and 5 will be similar to that for Build 3; limited RPG software and technical support required for ORDA project; funding available for the Accelerated Software budget exhibit for continued staff augmentation. Cheryl stated that deviation from the stated dependencies and assumptions would result in an unplanned ROC commitment which may impact build content or schedule.

Summary of technical discussions on new science ready for RPG implementation.

1) Enhanced Echo Tops (EET) Algorithm.

David Smalley briefed that the EET algorithm is targeted for RPG Build 4. The algorithm uses an interpolation scheme for higher spatial resolution, mitigating ripple or banding artifacts. The

algorithm has received positive reports from pilots who have seen the products. The algorithm requires the Data Quality Assurance algorithm. There are no anticipated programmatic risks, but the products will be larger, requiring compression. Implementation phase testing is approximately 15% complete.

2) Machine Intelligent Gust Front Algorithm (MIGFA).

David Smalley briefed that the MIGFA algorithm uses the reflectivity factor and radial velocity to detect gust fronts. Two versions will be implemented - with and without the Data Quality Assurance algorithm (DQA). The algorithm has already been implemented on the ASR and ITWS. The algorithm is resource intensive when running, but exact figures are not available yet. The algorithm is currently running under Sun OS. The development phase source code work is 100% complete, and the implementation phase source code work is approximately 5% complete. Implementation phase testing also is approximately 5% complete. The algorithm uses hundreds of parameters, and it is unclear how many of these will be adaptable in the field via the GUI. The algorithm is coded using C++, and requires the Csketch image processing library.

3) Layered Maximum Reflectivity and Composite Reflectivity with Improved Removal of AP and Artifacts.

Bill Bumgarner briefed that products 67 and 95-98 (composite reflectivity products) currently use an older Lincoln Laboratory AP removal algorithm. The newer DQA does a better job of identifying and removing AP and artifacts, and these five products will be modified to use the output of the DQA as input to the algorithm. The targeted user is WARP, and the effort is projected for Build 5. Change is low risk. There is no change in the legacy algorithm logic. Only the input data for algorithms is changed, to now use the DQA algorithm as input. Still waiting on requirements from the user. There is no anticipated increase in system resource usage.

4) Rapid Update for Meso (MRU Phases 1 and 2).

Mike Istok briefed the major features of the MRU algorithm. The fundamental difference between this algorithm and the legacy algorithm is that the radar data is analyzed for meso signatures after each elevation cut, instead of after completion of each VCP. Meteorological features which can be tracked from one elevation cut to the next are updated after each cut. Otherwise, they are "coasted" to the forecast position. Implementation is targeted for Build 4.

5) Rapid Update, Tornado Detection Algorithm (TDA).

Mike Istok briefed that the TDA algorithm is targeted for Build 5. TDA differs from the legacy TVS algorithm in the same way that MRU differs from the legacy meso detection algorithm. Radar data is analyzed for tornadic signatures after each elevation cut, instead of waiting for completion of the VCP. OS&T will

provide post-deployment technical and scientific support for the software. Impact of system resources is minimal, and development phase source coding is completed. No implementation phase coding and testing has been completed. Mike briefed that there are no plans to centrally collect this product. This topic was discussed by the group. Rich Vogt suggested that Mike investigate the feasibility of central collection, in case it should be desired in the future.

6) Mesocyclone Detection Algorithm (MDA).

Mike Istok stated that there wasn't really much status to report. Now in implementation phase, and 1D processing is coded. Mike estimates this to account for approximately 10% to 15% of the code. The targeted build is Build 5.

7) Software Changes Required to Centrally Collect Level II Data.

Christina Horvat provided a history of the Level II replacement program. A business case was made for central data collection and archiving in April 2002. Since that date, ORDA has raised the possibility of increased data streams due to product enhancements and new features. The ROC has been tasked to investigate the possible use of Internet2 vs the AWIPS WAN option previously recommended. ROC Engineering is also investigating the possible use of NWSnet and Multicast for Level II, with assistance of NWS CIO's office. The experimental project, CRAFT, is providing reliable data collection from about 60 sites via Internet/Internet2/Cable Modem/DSL/Private Telco, with latencies as low as 2 seconds and most under 20 seconds.

Opening General Session, 7 November.

Continue technical discussions on new science ready for RPG implementation.

1) New Volume Coverage Patterns (VCPs) (Phases 1 and 2).

Randy Steadham briefed the results of recent VCP testing. Field testing was conducted using the Keesler AFB WSR-88D (KBIX) running new VCPs, and Jackson, Slidell, and Mobile running legacy VCPs. The test ran from April through June, included 10 days of severe weather, and collected 8900 volumes of data for analysis. Randy showed data indicating that much storm data is lost between the 0.5 degree and 1.5 degree elevation cuts. VCP Gamma provides scans at 0.5, 0.9, and 1.3 degrees, filling in these gaps in data and permitting earlier detection and tracking of storms. Randy recommended implementing VCP Gamma in Phase 1, and VCP Beta in Phase 2.

2) Working Group Results Developing Plans for New VCPs.

Christina Horvat briefed results from the VCP working group. Following are some of the issues raised. User display systems will need software changes to display the new VCPs. Many display

systems have hard-coded the elevation cuts for the VCPs. Decisions need to be made regarding the use of adaptation data versus configuration data. Additional bandwidth will be needed, or compression/decompression will have to be implemented. WARP is already maxed out with their 14.4 kbps modems. Digital comms will not be available until July 2004--at the earliest. Display software issues and comms issues imply that new VCPs cannot be implemented in Build 4.

3) Enhanced Preprocessing (EPRE) Algorithm.

Dennis Miller briefed that this algorithm is a replacement for the legacy preprocessing algorithm (PPS). The legacy algorithm required the first four tilts of each VCP to be identical. The new algorithm permits the use of any proposed VCP. Implementation was initially targeted for Build 4, concurrent with the proposed implementation of VCP Gamma. Since the implementation of Gamma has slipped to no earlier than Build 5, there is no urgency to implement this algorithm in Build 4. Cheryl asked if Dennis could support implementation in Build 4 anyway, to distribute the workload that is accumulating for Build 5. Dennis stated he thought he could support implementation in Build 4. The Blockage Algorithm must be implemented prior to or concurrent with the EPRE.

4) Implement Range Correction Algorithm (RCA) (Phases 1 and 2).

Dennis Miller briefed that the RCA improves the Precipitation Processing System (PPS) by utilizing knowledge of the Vertical Profile of Reflectivity, and projecting reflectivity measurements aloft to ground level. Corrections will be passed to the PPS. The RCA consists of two main tasks, and will be implemented in Builds 5 and 6. The algorithm is fully developed on a development RPG. Implementation Phase source coding and testing are approximately 70% and 50% complete. Dennis stated the algorithm resource requirements - 2.5 seconds of cpu time per volume, and 5.4 megabytes of system memory. The algorithm is written in Fortran and C, and adds approximately a dozen adaptable parameters.

5) Convective Stratiform Separation Algorithm (CSSA).

Dennis Miller briefed that the CSSA is a companion algorithm to the RCA. The CSSA will provide guidance to the forecaster regarding whether and where to apply corrections from the RCA algorithm to the PPS rainfall accumulation products. The CSSA can also be implemented directly into the RCA algorithm. The targeted build is RPG Build 6, at the earliest. System usage is similar to that of RCA. Rich Vogt commented that attention should be applied to making algorithms more automated, with less intervention required from the operator.

6) Enhanced SCIT.

Capt Rhonda Scott provided a follow-up briefing on new merge SCIT improvements, an action item generated during the April '02 SREC.

The items investigated were the resources required to implement vertical association and tracking enhancements to the legacy SCIT, the staff time required for implementation, and who the primary implementers should be the ROC or OST. Improvements to the algorithm affect only one of the four SCIT tasks. Two new modules will be added, increasing task memory usage by 20% and CPU usage by 50%. Four new adaptable parameters will be added. The estimated staff time to implement this task is 4.5 staff months. The Applications Branch recommended implementing merge SCIT and a filtering technique, which further improves failure rates, together under the following conditions: 1) if filtering optimization/evaluation is successful and SCIT performance maintained; and 2) when filtering optimization/evaluation is completed - early FY04. The targeted build date for SCIT improvements is Build 6.

7) MPDA.

Capt Rhonda Scott briefed the MPDA algorithm, targeted for Build 5. MPDA was tested on the radar data collected for the new VCP testing using the Keesler AFB WSR-88D from April through June. Range aliasing was reduced by over 50%, on average. Implementation phase source coding and testing are 100% complete and 5% complete, respectively. The algorithm will add approximately 20 adaptable parameters. There was some discussion regarding whether this algorithm is overcome by events, given the likelihood of Range/Velocity mitigation techniques being implemented with ORDA Build 2. Because of Implementor to Integrator hand-off procedures and timeline constraints it was determined that MPDA efforts should continue in conjunction with ORDA efforts. MPDA would allow forecasters to utilize significant improvements in range and velocity dealiasing prior to implementation of the range/velocity mitigation techniques. An action item (1102-11) was assigned for the agencies to evaluate how soon they could utilize the MPDA algorithm.

8) How the RDA and RPG Will Need to be Modified to Accommodate Increased RDA Data Flows Due to New Science

Capt Dustin Evancho briefed bandwidth issues resulting from ORDA enhancements and new products. Items specifically examined by ROC engineering were the new VCPs, 0.5 degree radials, and 0.25 km range resolution. If these three improvements are fielded with ORDA Build 2, they will overwhelm the existing T1 data link capacity. Possible remedial actions include hardware upgrade of the T1 (additional circuits) and data compression (software impact only). Any software changes will affect both ORDA (Build 2) and RPG (Build 6). ROC engineering will submit a CCR describing the problem, changes necessary to implement compression, and the cost of not implementing compression. ECP and software development will proceed based on acceptance or nonacceptance of the CCR. An update will be provided at the next SREC.

9) ORDA Enhancements.

Greg Cate briefed the results of the June Technical Interchange Meeting in which 27 possible ORDA enhancements were prioritized by the NWS. (New ORDA science enhancements had not received triagency approval.) Six enhancements were identified as priority: 0.5 degree azimuth sampling, 0.25 km reflectivity range bins, range oversampling, R-V mitigation techniques, full power spectrum at each range bin, and improved spectrum width. Sigmet has an already developed capability to provide these features. It is necessary to evaluate Sigmet's implementation for suitability for our users' needs. ROC is developing an evaluation plan for 0.5 degree azimuth resolution, 0.25 km range resolution, and range oversampling. ROC, NCAR, and NSSL will cooperatively evaluate data whitening, R-V mitigation, and full power spectrum and each range bin. The earliest ORDA Enhancement Build (Build 2), will be first quarter of calendar year 2005. Integration with other planned software releases is crucial.

10) Enhanced PPS Rate Accumulation.

This work will provide improved accuracy and support shorter VCPs. A long-suspected problem in the Precipitation Processing System (PPS) was confirmed to be a result of the cumulative effects of mathematical truncations within the PPS Rate Accumulation Algorithm. The enhanced version of this algorithm provides greater precision and accuracy in its computations, with minor impact on system resources. It is fully backwards compatible from a functional standpoint. This new version of the algorithm also includes necessary enhancements to support the 4.1 minute Volume Coverage Pattern (VCP) targeted for release in Build 5.

Executive Session

The SREC members approved the following RDA and RPG build contents and release dates. The PMC will finalize the RPG Build 4 content and release date of 30 September 2003 recommendation.

<u>TITLE</u>	<u>REQUESTING ORGANIZATION</u>
Rapid Update For Mesocyclone Algorithm	NWS
Enhanced PPS Rate/Accumulation: Improved Accuracy And Shorter VCP Support	NWS
Enhanced Echo Top Product	FAA
Improvements To High-Resolution Vertically Integrated Liquid (HRVIL) Product	FAA
Compression of Intermediate Products/Expansion of Compression Capabilities	ROC
Improved Error Reporting	ROC
Communications Manager Improvement	ROC
Merge Field Edits For Adaptation Data Parameters	ROC
Continue Porting RPG Software To PC	

	(Offline Implementation)	ROC
General Software Maintenance		ROC
Elevation Based Product		ROC
Product Removal		ROC
<u>Product Code</u>	<u>Product Name</u>	
42	Echo Tops Contour	
39 & 40	Composite Reflectivity Contour	
88	Combined Shear Contour	
49	Combined Moment	
53	Weak Echo Region	
52	Spectrum Width Cross Section	

PROPOSED CHANGE	PROPOSED		COMMENTS
	BUILD DEPLMT	ACTUAL BUILD	
Rapid update - Mesocyclone	4	4	Internal product
Rapid update - TDA	5	5	
EPRE	5	5	
MDA (Phase 1)	5	5	
PPS - RCA (Phase 1)	5	5	Allow user to view corrections. Phase 2 will apply corrections. Resource intensive. Depends on EPRE.
New VCP's (Phase 1)	5	5	Gamma. Triagencies to evaluate user systems' readiness for new Gamma VCP.
New VCP's (Phase 2)	6	6	VCP Beta.
MDA (Phase 2)	6	6	
Snow Accumulation	6	6	
PPS - RCA (Phase 2)	6	6	
Convective Stratiform Correct	6	6	
Enhanced Echo Top	4	4	Dave Smalley will implement. Cheryl Stephenson will provide a product code.
Improvements of HRV1L	4	4	
MIGFA	5	5	FAA to provide CPU usage stats
Composite Reflectivity with DQA	5	5	
RPG changes for ORDA	5	5	Engineering drop by end of July 03 to ORDA.
Improved Error Reporting	5	4	
Archive II Central Data Collection	5	5	Awaiting final project approval.
Break Out MSCF into CPCI	5	5	ROC will accomplish.
Comm Manager Improvement	4	4	ROC will accomplish.
Library svc-compression for intermediate late products	4	4	

Merge of field edits for adaptation	4	4	
Continue PC port	4	4	
Implement "Generic" product	5	5	
Improve Data Management in RPG	4	4	
Enhances Rate Accumulation	4	4	To support 4.1 minute VCPs
Multi-scale Echo Tracker	7	7	
Products removal	4	4	
RV Ambiguity Mitigation *	7/ORDA B2		
0.5 base data*	7/ORDA B2		
0.25 km reflectivity data*	7/ORDA B2		
Enhanced SCIT	6	6	
MPDA	5	5	VCP Gamma or 21
Comm changes to support increased data flow*	6/7	6 or 7	
Range over sampling**	8/ORDA B3		
Full power spectrum width**	8/ORDA B3		
Compression of full resource products	4	4	
Digital comms	5	5	

Action Items Resulting From The
December 2001, April 2002, and November 2002 SREC Meetings
(Status As Of 7 March 2003)

1201-7. Action Officer: Bill Armstrong. Develop a short, 2 pager, description of the concept of use and requirement for placing Open RPG software on a PC platform. Include how this fits in with the other priorities for ROC software work.

Suspense: 31 January 03

Status: **Open**

0402-1. Action Officer: Bob Saffle. Develop a cost estimate, test objectives, concept of operations, and concept of support for placing Open RPG clones in the field (2 per NWS CONUS region). The systems will be used for field tests of proposed WSR-88D RPG algorithms.

Suspense: 31 January 03.

Status: **Open**

0402-2. Action Officer: Tim Crum. (1) Ensure discussion of the "field tests" mentioned in action item 0402-1 is included in the fall TIM agenda. (2) Ensure the status of this effort is included in the fall SREC agenda.

Suspenses: (1) Closed. (2) Next SREC meeting.

Status: **Open**

0402-3. Action Officers: Bill Armstrong and Cheryl Stephenson. Provide the SREC with measurements of RPG system resource usage.

Suspense: Next SREC Meeting.

Status: **Open.**

0402-4. Action Officers: Bill Armstrong and Cheryl Stephenson. Identify the tools to use and what system resource usage metrics should be used.

Suspense: 1 July 02.

Status: **Open.**

0402-5. Action Officer: Bill Armstrong. (1) Lead a meeting with the agency implementers (Bill Bumgarner, Chris Dietz, Pete Pickard, Jon Roe, and Mike Istok) within 30 days to better define the implementor-to-integrator interface. (2) Complete the documentation of the process by the next SREC meeting.

Suspenses: (1) 11 May 02 and (2) Next SREC Meeting.

Status: (1) Closed with April 24 and 25 meetings at NWS HQ and June 14 VTC. (2) **Open**

0402-6. Action Officers: Bill Armstrong and Cheryl Stephenson. Determine what RPG software changes are needed to support the Evansville radar. We need to compare these required changes against the contract.

Suspense: 1 June 02.

Status: Closed. No RPG software change required. RPG successfully deployed with Evansville radar in January 2003 and provides AWIPS/network connectivity.

0402-7. Action Officer: Tim Crum. Request, from the appropriate office in NWS HQ, a formal reply on the NWS intentions to implement electronic transmission of Level III data to NCDC for archiving. Include information on how this information will impact the availability of ROC resources to implement new science into the WSR-88D RPG.

Suspense: 15 May 02.

Status: Closed. NWS implemented the electronic transmission of Level III data to NCDC in November 2002.

0402-8. Action Officer: Tim Crum. Provide implementers information on what should be included in the concept of operations that is to accompany the algorithm process checklist.

Suspense: 1 May 02.

Status: Closed. Elements of the Concept of Operations from Warning Decision Training Branch incorporated into the updated Algorithm Process Checklist on 22 July 02.

0402-9. Action Officer: Cheryl Stephenson. Develop a CCR, with OS and OS&T coordination, to state the requirement for the addition of status messages to Level III products transmitted electronically. This will facilitate the transmission of the status messages to the NCDC archives when Level III data are sent to the NCDC electronically for archiving.

Suspense: 1 June 02.

Status: **Open**

0402-10. Action Officer: Tim O'Bannon. Provide the SREC with a recommendation on whether the DQA and/or REC output should be used to remove AP/clutter from the composite reflectivity product.

Suspense: Fall SREC Meeting.

Status: **Open**

0402-11. Action Officer: Dennis Roofe, John Simensky, and Mike Spaulding. Determine whether the FAA-proposed echo tops algorithm should REPLACE the legacy echo tops algorithm or be an additional product. Survey users, include comparison examples, and provide reviewers the necessary caveats.

Suspense: Spring 05.

Status: **Open**

0402-12. Action Officer: Tim Crum. Determine the process for coordinating new products and changes to products with Family Of Service (FOS) and other external users.

Suspense: Next SREC following AMS.

Status: Closed. At the FOS meeting two vendors complained of short notices of weather radar changes (i.e., Evansville radar installation and Jackson, MS to Brandon, MS RDA move). NWS HQ and Tim Crum agreed

to: (1) send notices of changes to users via email to the FOS email list; and (2) create a link off of RPCCDS/Central Server web page to a location notifying users of current and planned changes that will affect users.

0402-13. Action Officer: Rhonda Scott. Ensure a discussion of the technical merits of the FAA-proposed echo tops algorithm is on the fall 2002 TAC meeting agenda.

Suspense: 1 May 02.

Status: Closed with May 2002 TAC agenda item on this topic. The TAC discussed this algorithm and was supportive. The FAA will obtain verification data during further testing.

0402-14. Action Officer: Christina Horvat. Update the Algorithm Process Checklist for the electronic collection and transfer of Level II data.

Suspense: 1 June 02.

Status: Closed with updated checklist prepared for April 2003 SREC.

0402-16. Action Officer: Christina Horvat. Organize and lead a working group to develop a plan for developing a concept of operations, concept of support, algorithm impact, and details of internal and external dependencies for new VCPs (including MPDA). This group should include (at a minimum) specialists in communications, operations, testing, and operator training. Provide the SREC a written report and recommendation for when new VCPs can be implemented.

Suspense: 1 August 02.

Status: Closed. Presentation provided at November 2002 SREC.

0402-17. Action Officers: John Simensky and Mike Spaulding. Determine the agency requirements for the proposed Blockage Algorithm to provide products suitable for on-site display of the blockage map the algorithm generates for new VCPs. Coordinate the results with the FAA focal point.

Suspense: Next SREC.

Status: **Open**

0402-18. Action Officers: John Simensky, Dennis Roofe, and Mike Spaulding. Obtain feedback from their agency users and external users on how to implement the MDA. For example, consider whether the legacy and new products need to be in the system together for a transition period.

Suspense: 1 March 03

Status: **Open**

0402-19. Action Officer: Rhonda Scott. Assess the possibility of retrofitting the legacy SCIT with the vertical association capability and the earliest this capability could be deployed. Recommend whether the ROC or OS&T should be the implementers.

Suspense: 1 November 02.

Status: Closed. Closed with November 2002 SREC presentation.

0402-20. Action Officer: Rhonda Scott. Add review of the HDA to the May 2002 TAC agenda. The focus is on mid-level rotation and the performance improvements of this latest version of the HDA.
Suspense: 1 May 02.
Status: Closed. The HDA presentation was made at the TAC. The TAC recommends this algorithm not be deployed and that future hail work be aimed at use of dual polarization information.

0402-21. Action Officers: Steve Shema, John Simensky, and Mike Spaulding. Coordinate the list of products to be removed in Build 3 with the field concurrence.
Suspense: 1 December 02.
Status: Closed. List agreed to at November 2002 SREC meeting.

0402-22. Action Officers: Bill Armstrong. Provide the ROC director a recommendation on whether the compiler update and move to Solaris 8 should be included or not included in Build 3
Suspense: TBD.
Status: Closed. Solaris 8 will be implemented in Build 3.

0402-23. Action Officer: Bill Armstrong. The ROC software engineering needs to frequently publish the CCR additions to a build and advertise these additions to the agencies periodically. Suspense: 15 December 02.
Status: Closed. ROC has begun to place build CCR list updates on the ROC web site (http://www.osf.noaa.gov/ssb/cm/csw_notes/compsw.asp).

0402-24. Action Officers: Bill Armstrong. Determine whether the FAA is funding damaging downburst algorithm work at the NSSL. Suspense: 1 July 02.
Status: Closed. FAA is not funding.

0402-25. Action Officers: Rhonda Scott. Have the TAC review the operational cost-benefit of the damaging downburst algorithm.
Suspense: Spring 2003 TAC meeting.
Status: **Open**

0402-26. Action Officers: Steve Shema, John Simensky, and Mike Spaulding. Advise the focal points for their connecting systems that will affect their interfaces with the RPG.
Suspense: TBD.
Status: Closed. Ongoing routine activity.

1102-01. Action Officers: Maj Mike Miller. Form working group to evaluate test bed contention issues between ORDA and RPG Build 5 projects.
Suspense: Next SREC
Status: Closed. Working group, including ORDA staff, met in January 2003 and will continue to meet. ROC has provided ORDA leadership a plan for optimizing shared use of the KCRI test bed.

1102-02. Action Officers: Greg Cate, Bill Armstrong, with tri-agency participation. Develop a strategy for synchronizing ORDA and RPG builds.

Suspense: Next SREC

Status: **Open**

1102-03. Action Officers: Greg Cate. Acquire documentation of Sigmet RVP8 algorithms.

Suspense: 31 December 2002

Status: **Open**

1102-04. Action Officers: Greg Cate, Mike Istok. Perform triagency requirements analysis for the 26 possible ORDA enhancements.

Suspense: Next SREC

Status: **Open**

1102-05. Action Officers: Bill Armstrong. ROC software engineering is to provide projections on future computing resource(s) consumption for RPG Builds 4 and 5 at the next SREC. Presentation topics may also include benchmark data, usage tools and associated guidance, general methodology, and definition of "full load" metrics.

Suspense: Next SREC

Status: **Open**

1102-06. Action Officers: Dennis Rooft, John Simensky, and Mike Spaulding. Each agency needs to confirm their systems readiness and ability to handle the new GAMMA VCP in RPG Build 5. Each agency needs to assess their systems readiness, flexibility and general ability to accommodate additional new VCPs - perhaps beginning with Beta in RPG Build 6.

Suspense: Next SREC

Status: **Open**

1102-07. Action Officers: Capt Dustin Evancho. Determine a benchmark figure for the fastest VCP that the system can support, for user systems requirements analysis.

Suspense: Next SREC

Status: **Open**

1102-08. Action Officers: Chris Dietz. Provide size/resource consumption for PPS RCA.

Suspense: 15 March 2003

Status: Closed with information provided at the 14 March RCA DAR.

1102-08. Action Officers: Bill Bumgarner. Provide size/resource consumption for MIGFA.

Suspense: 15 March 2003

Status: **Open**

1102-09. Action Officers: Mike Istok. Provide a process for controlling software used for field testing.

Suspense: 31 January 2003

Status: **Open**. Aerospace Corp. is heading this effort and held a VTC with NWS HQ and ROC staff in late January. Aerospace will incorporate the agreements reached at this meeting in the next draft, before the April 2003 SREC.

1102-10. Action Officers: Bill Armstrong. ROC software engineering will arrange a meeting to discuss RPG build testing (as requested by Bill Bumgarner and Mike Istok). Tri-agency reps (Bumgarner, Istok and Spaulding will be notified) will be invited to participate - as will representatives from across ROC functional areas.

Suspense: 31 December 2002

Status: **Open**

1102-11. Action Officers: Dennis Roofe, John Simensky, Mike Spaulding. Evaluate how soon they could utilize the MPDA algorithm.

Suspense: Next SREC

Status: **Open**

People Attending/Participating in the November 2002 SREC Meeting

FAA

Dennis Roofe
Doug Erickson
Cam Tidwell
Rick Mattox
Steve Walden
Jim Sheets
Courtenay Clifford

NWS

Greg Noonan
Greg Cate
Roger Hall
Stephanie Heaps
Bob Elvander
Jon Roe
Mike Istok
Dennis Miller
Melanie Taylor, NWS/OST(RSIS)
Brian Klein, NWS/OST(RSIS)
Christine Dietz
Howard Cozzi

DOD

Mike Spaulding

ROC

Rich Vogt
Jim Belville
Rhonda Scott
Cheryl Stephenson
Bob Lee
Scott Garfield
Mike Miller
Rex Reed
Doug Martindale
Steve Smith
Zack Jing
Russ Cook

Invited Guests

Mike Jain - NSSL
Jamie Boettcher - WDTB
Nickie Nelson, Aerospace Corp.
Bonnie Troup, Aerospace Corp.